FIG.1

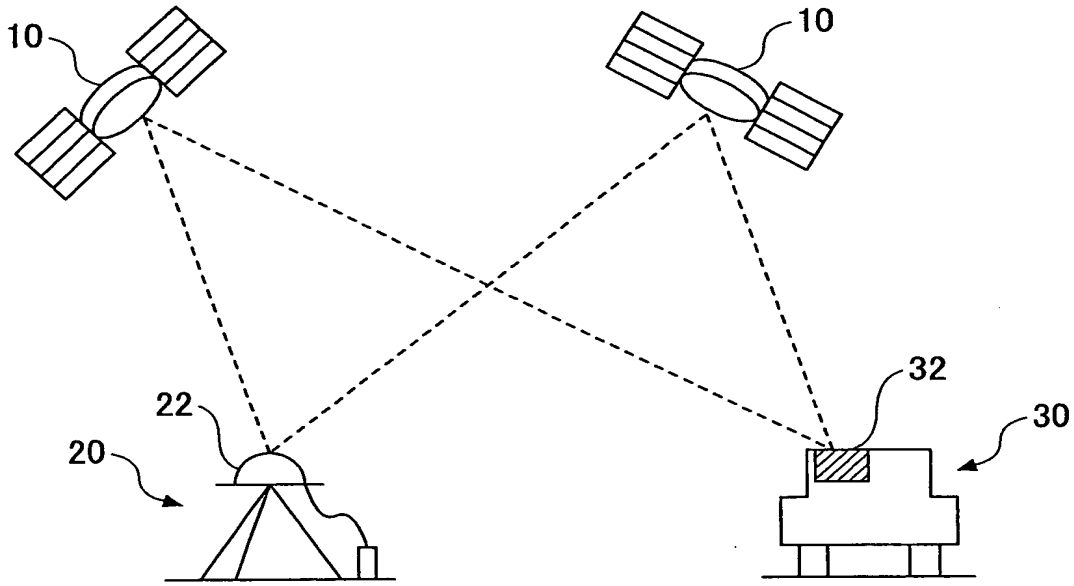


FIG.2

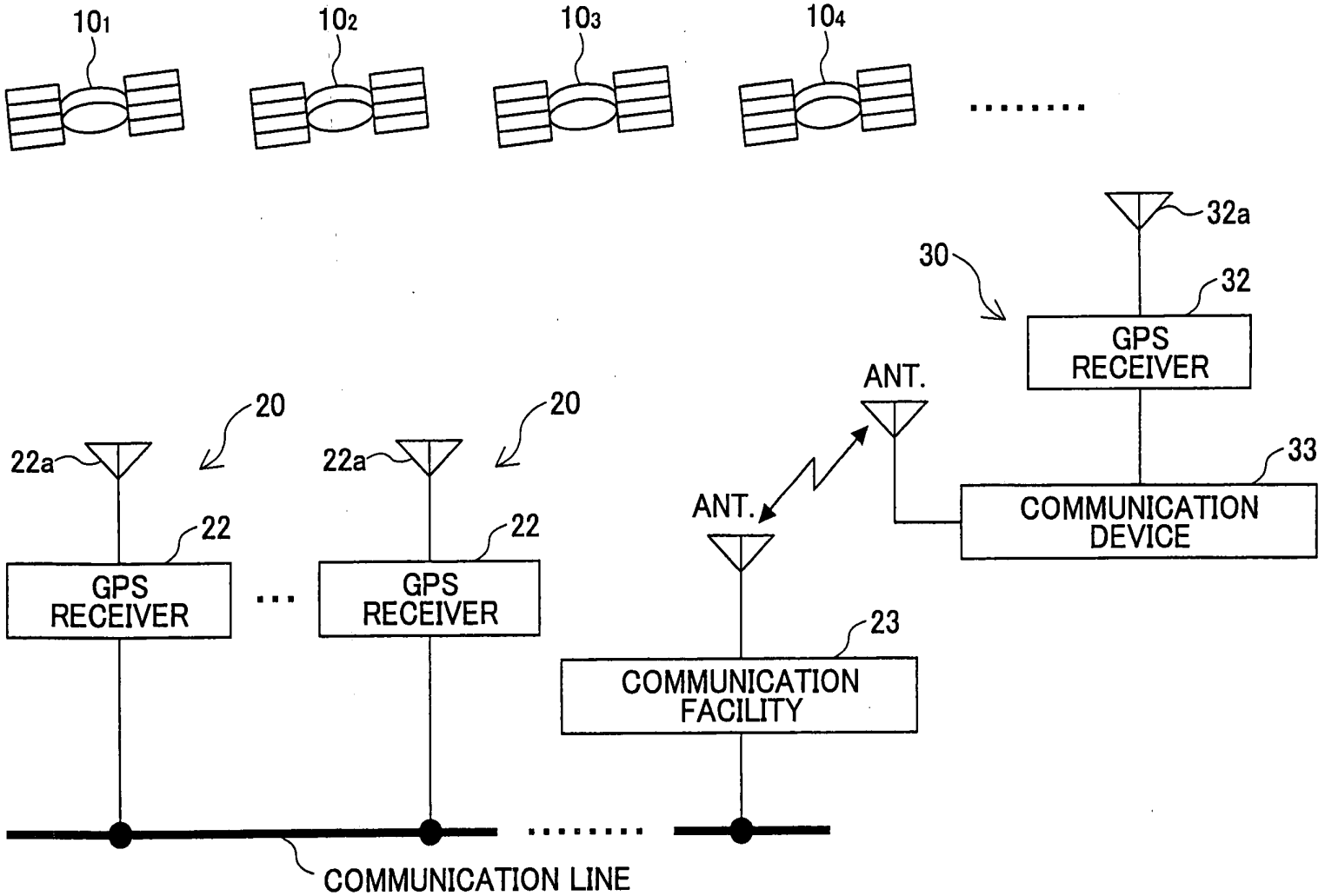

10₁
10₂
10₃
10₄
.....
32a
30
32
GPS RECEIVER
ANT.
20
20
33
22a
22a
ANT.
22
22
COMMUNICATION DEVICE
GPS RECEIVER
GPS RECEIVER
23
COMMUNICATION FACILITY
.....
COMMUNICATION LINE

FIG.3

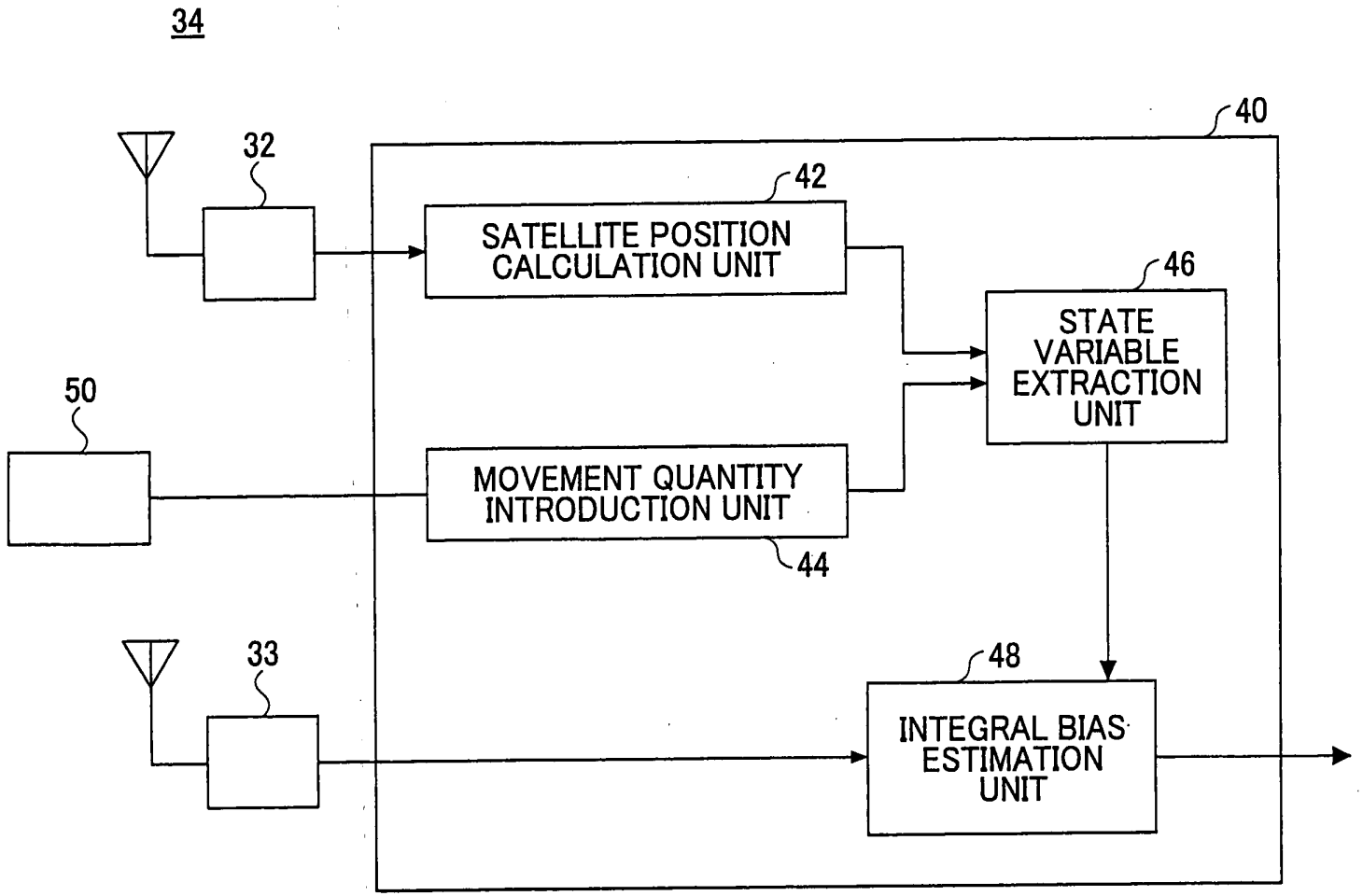
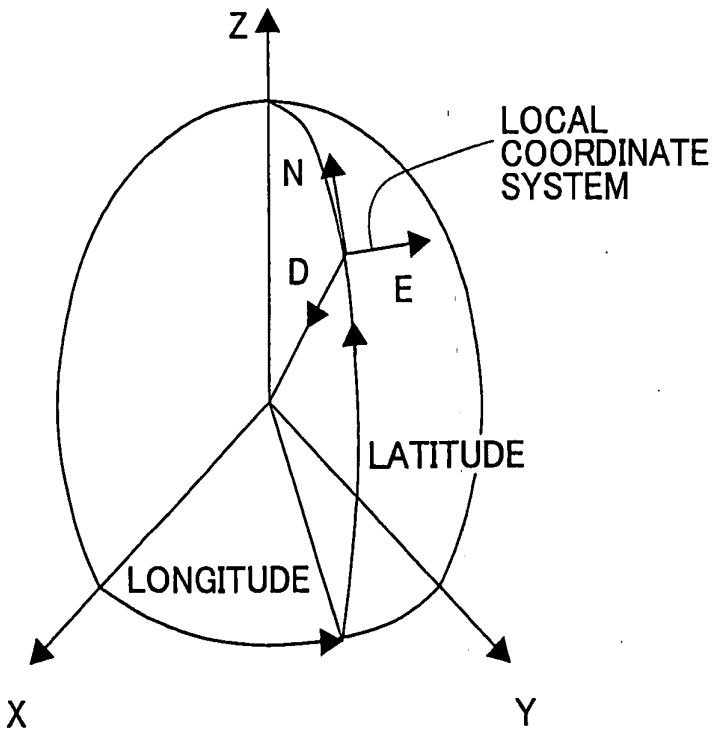
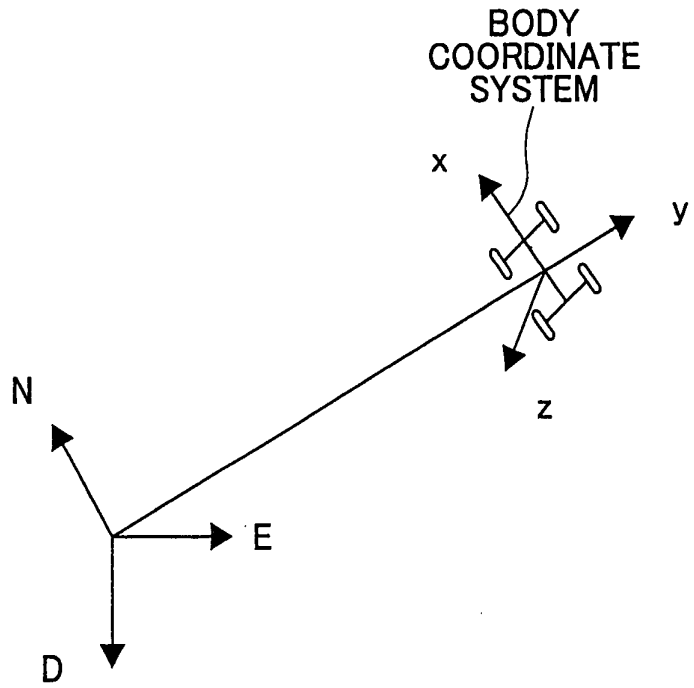

34
40
32
42
SATELLITE POSITION CALCULATION UNIT
46
STATE VARIABLE EXTRACTION UNIT
50
MOVEMENT QUANTITY INTRODUCTION UNIT
44
33
48
INTEGRAL BIAS ESTIMATION UNIT

FIG.4



WORLD COORDINATE SYSTEM
AND
LOCAL COORDINATE SYSTEM



LOCAL COORDINATE SYSTEM
AND
BODY COORDINATE SYSTEM

FIG.5

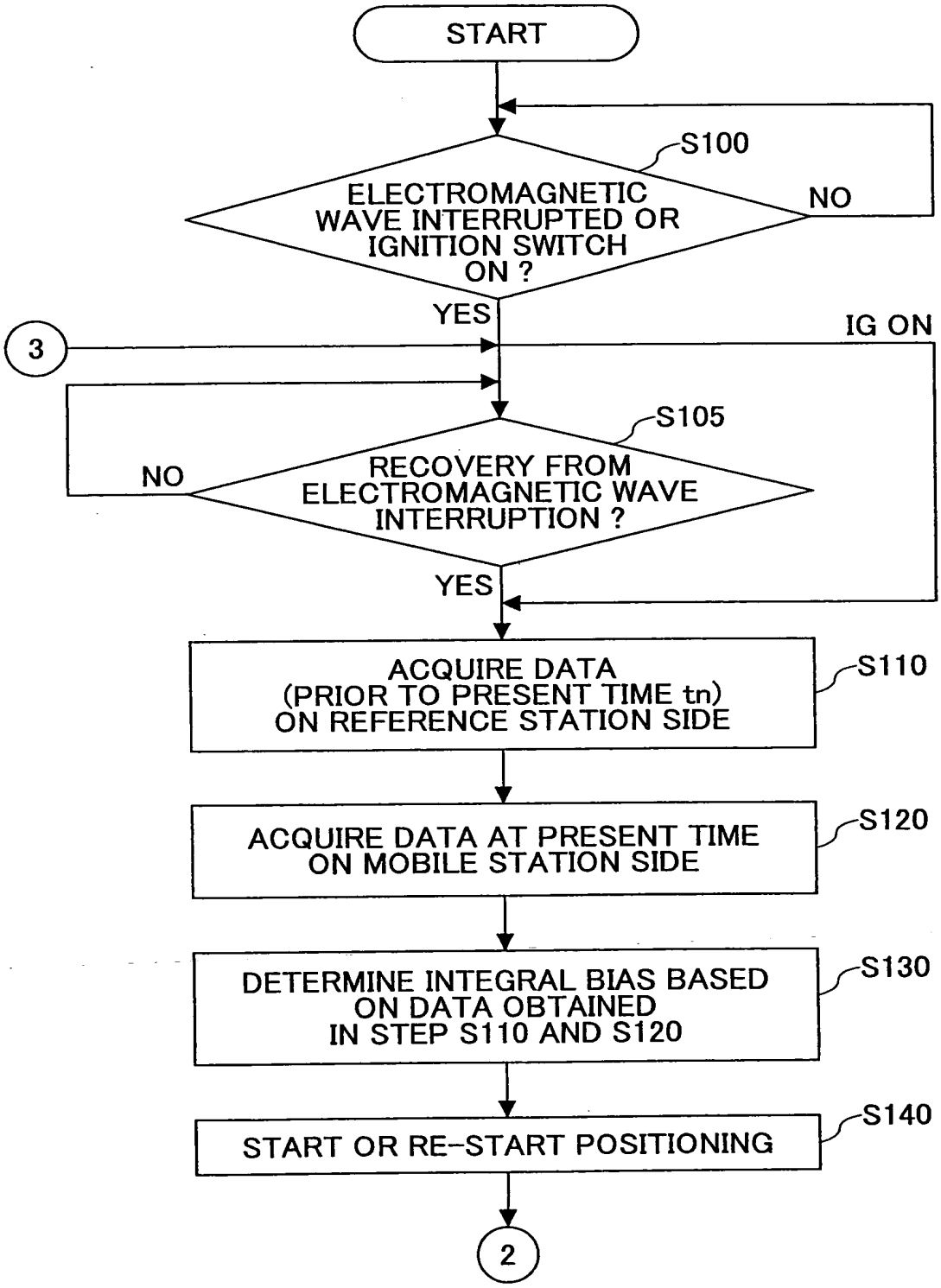

START
S100
ELECTROMAGNETIC WAVE INTERRUPTED OR IGNITION SWITCH ON ?
NO
YES
IG ON
3
S105
NO
RECOVERY FROM ELECTROMAGNETIC WAVE INTERRUPTION ?
YES
ACQUIRE DATA (PRIOR TO PRESENT TIME tn) ON REFERENCE STATION SIDE
S110
ACQUIRE DATA AT PRESENT TIME ON MOBILE STATION SIDE
S120
DETERMINE INTEGRAL BIAS BASED ON DATA OBTAINED IN STEP S110 AND S120
S130
START OR RE-START POSITIONING
S140
2

FIG.6

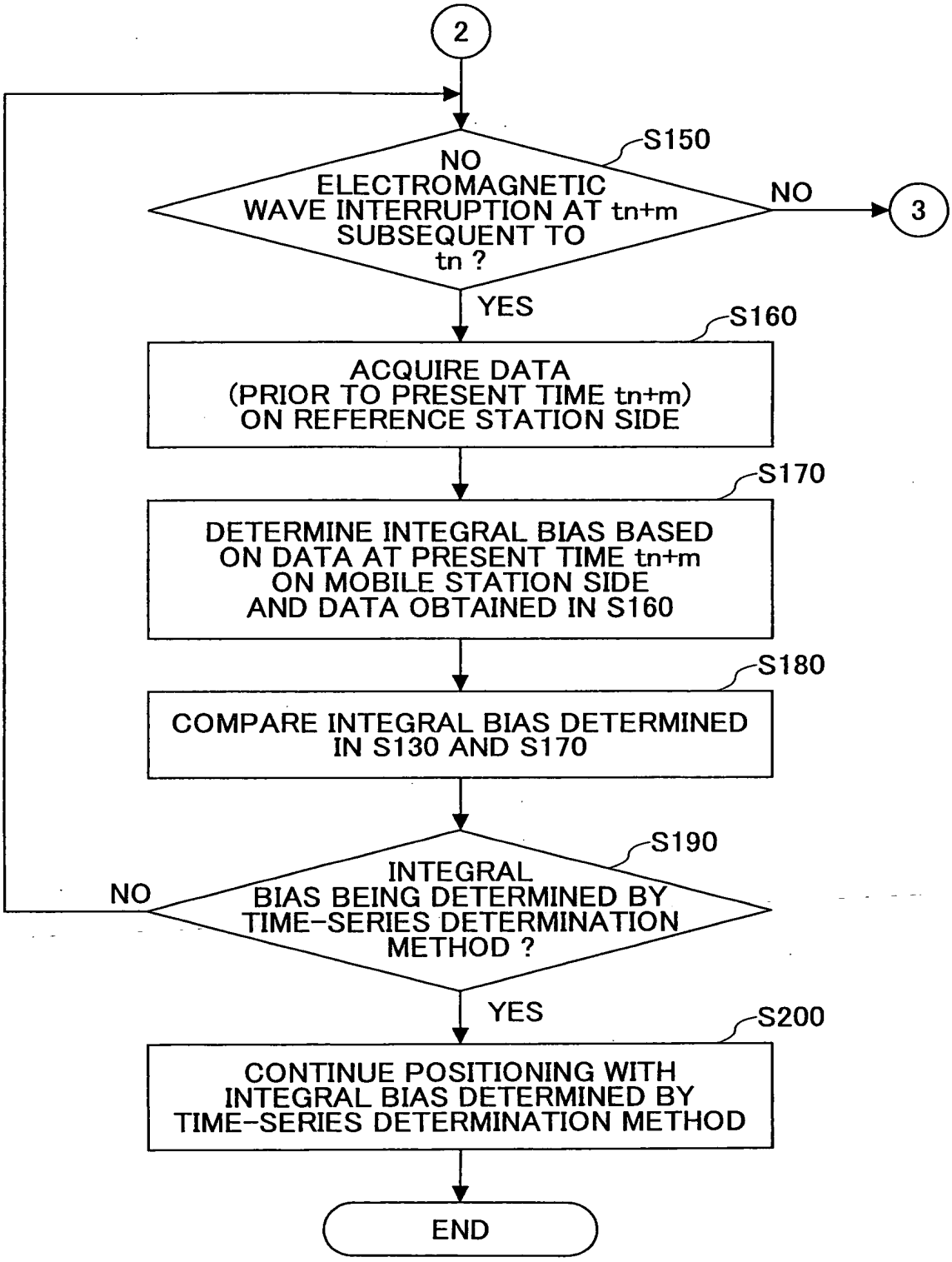

2
S150
NO ELECTROMAGNETIC WAVE INTERRUPTION AT tn+m SUBSEQUENT TO tn ?
NO
3
YES
S160
ACQUIRE DATA (PRIOR TO PRESENT TIME tn+m) ON REFERENCE STATION SIDE
S170
DETERMINE INTEGRAL BIAS BASED ON DATA AT PRESENT TIME tn+m ON MOBILE STATION SIDE AND DATA OBTAINED IN S160
S180
COMPARE INTEGRAL BIAS DETERMINED IN S130 AND S170
S190
INTEGRAL BIAS BEING DETERMINED BY TIME-SERIES DETERMINATION METHOD ?
NO
YES
S200
CONTINUE POSITIONING WITH INTEGRAL BIAS DETERMINED BY TIME-SERIES DETERMINATION METHOD
END

FIG.7

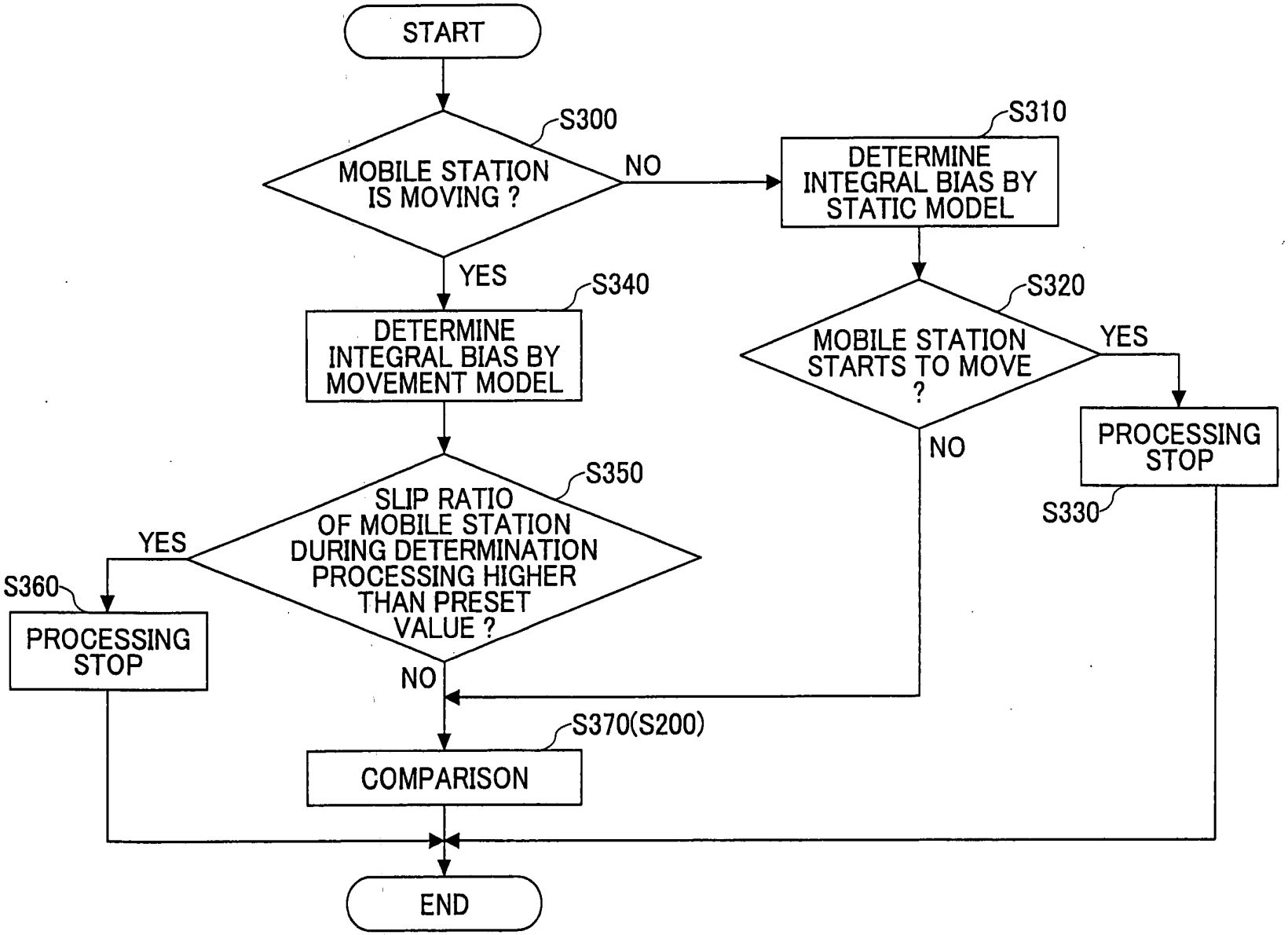

START
S300
MOBILE STATION IS MOVING ?
NO
S310
DETERMINE INTEGRAL BIAS BY STATIC MODEL
YES
S340
DETERMINE INTEGRAL BIAS BY MOVEMENT MODEL
S320
MOBILE STATION STARTS TO MOVE ?
YES
PROCESSING STOP
S330
NO
S350
SLIP RATIO OF MOBILE STATION DURING DETERMINATION PROCESSING HIGHER THAN PRESET VALUE ?
YES
S360
PROCESSING STOP
NO
S370(S200)
COMPARISON
END

FIG.8

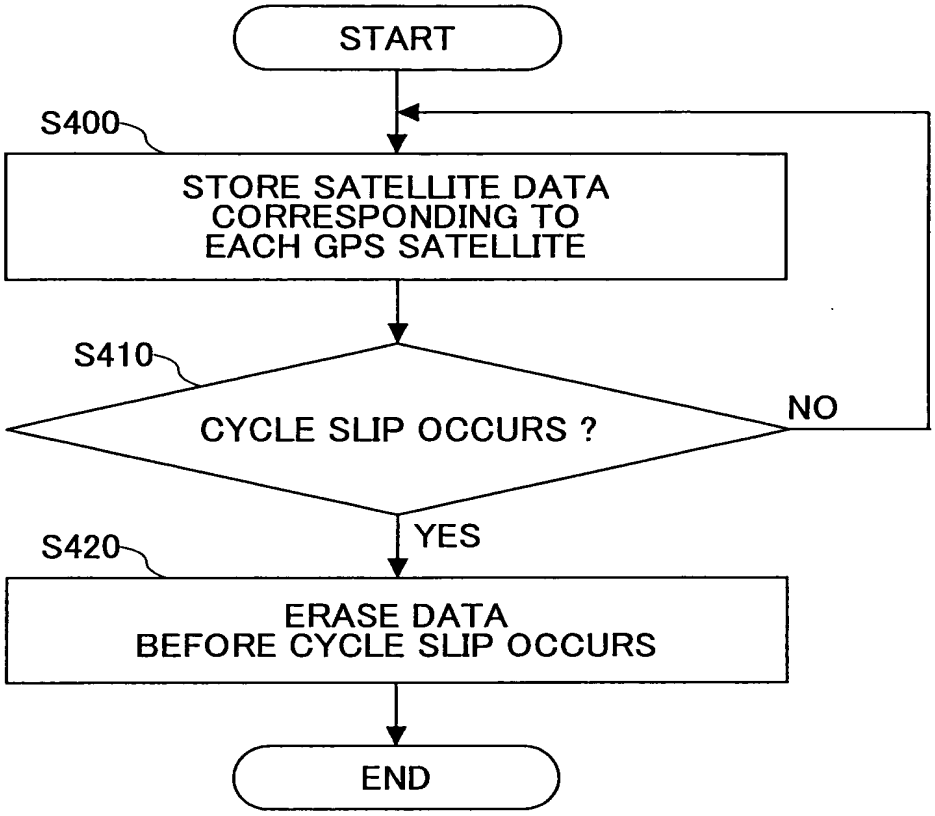
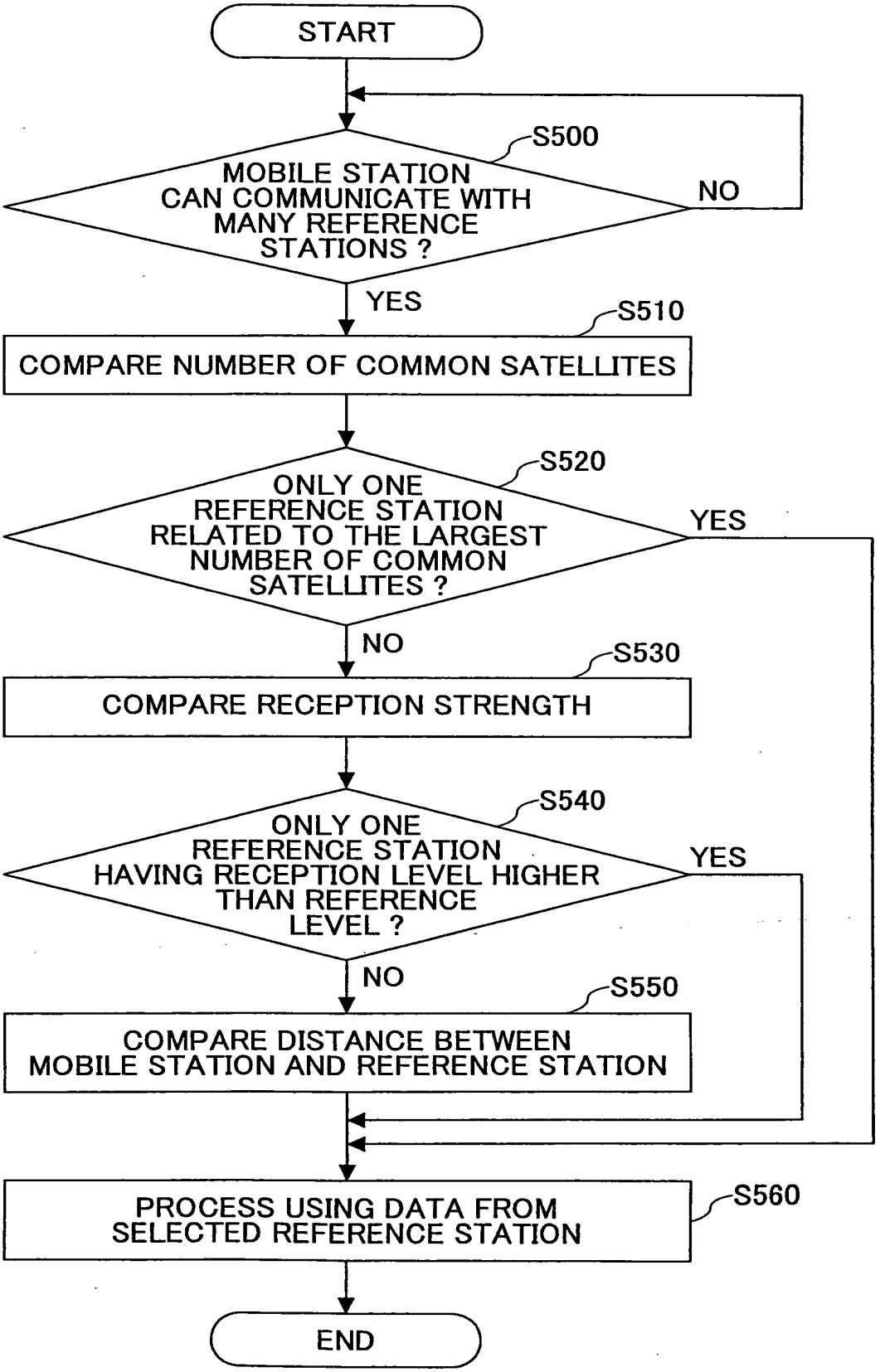

START
S400
STORE SATELLITE DATA CORRESPONDING TO EACH GPS SATELLITE
S410
CYCLE SLIP OCCURS ?
NO
YES
S420
ERASE DATA BEFORE CYCLE SLIP OCCURS
END

FIG.9


START
S500
MOBILE STATION CAN COMMUNICATE WITH MANY REFERENCE STATIONS ?
NO
YES
S510
COMPARE NUMBER OF COMMON SATELLITES
S520
ONLY ONE REFERENCE STATION RELATED TO THE LARGEST NUMBER OF COMMON SATELLITES ?
YES
NO
S530
COMPARE RECEPTION STRENGTH
S540
ONLY ONE REFERENCE STATION HAVING RECEPTION LEVEL HIGHER THAN REFERENCE LEVEL ?
YES
NO
S550
COMPARE DISTANCE BETWEEN MOBILE STATION AND REFERENCE STATION
PROCESS USING DATA FROM SELECTED REFERENCE STATION
S560
END